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NATIONAL TRANSPORTATION SAFETY BOARD

49 CFR Part 830

[Docket No.: NTSB-2021-0004]

RIN 3147-AA20

Amendment to the Definition of Unmanned Aircraft Accident

AGENCY: National Transportation Safety Board (NTSB).

ACTION: Final rule.

SUMMARY: The National Transportation Safety Board (NTSB) is issuing a final rule, amending the definition of "Unmanned aircraft accident" by removing the weight-based requirement and replacing it with an airworthiness certificate requirement. The weight threshold is no longer an appropriate criterion because unmanned aircraft systems (UAS) under 300 lbs. are operating in high-risk environments, such as beyond line-of-sight and over populated areas. The amended definition will allow the NTSB to be notified of and quickly respond to UAS events with safety significance. Since the notice of proposed rulemaking (NPRM), the agency considered comments and as a result eliminated the "airworthiness approval," while keeping "airworthiness certification."

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

FOR FURTHER INFORMATION CONTACT: Kathleen Silbaugh, General Counsel, (202) 314-6080, rulemaking@ntsb.gov.

SUPPLEMENTARY INFORMATION:

I. Background

The NTSB prescribes regulations governing the notification and reporting of accidents involving civil aircraft. As an independent Federal agency charged with investigating and establishing the facts, circumstances, and probable cause of every civil

aviation accident in the United States, the NTSB has an interest in redefining a UAS accident in light of recent developments in the industry.

For NTSB purposes, "unmanned aircraft accident" means an occurrence associated with the operation of an unmanned aircraft that takes place between the time that the system is activated with the purpose of flight and the time that the system is deactivated at the conclusion of its mission, and in which any person suffers death or serious injury, or in which the aircraft has a maximum gross takeoff weight of 300 lbs. or greater and receives substantial damage.

At the time this definition was contemplated, the weight-based requirement was necessary because defining an accident solely on "substantial damage" would have required investigations of numerous small UAS (sUAS) crashes with no significant safety issues. *See* final rule, 75 FR 51953, 51954 (Aug. 24, 2010). Consequently, there is no legal requirement to report or for the NTSB to investigate events involving substantial damage to UAS weighing less than 300 lbs. because these are not recognized "unmanned aircraft accidents" under the NTSB's regulations. While this definition ensured that the NTSB expended resources on UAS events involving the most significant risk to public safety, the advent of higher capability UAS applications—such as commercial drone delivery flights operating in a higher risk environment (e.g., populated areas, beyond line-of-sight operations, etc.)—has prompted the agency to propose an updated definition of "unmanned aircraft accident." Moreover, in the August 24, 2010, final rule, the NTSB anticipated future updates of the definition given the evolving nature of UAS technology and operations. *Id*.

On May 21, 2021, the NTSB issued an NPRM announcing its intent to issue a rule amending the definition of "Unmanned aircraft accident" by removing the weight-based requirement and replacing it with an airworthiness certificate or airworthiness approval requirement. 86 FR 27550 (May 21, 2021). The weight threshold is no longer

an appropriate criterion because UAS under 300 lbs. are operating in high-risk environments, such as beyond line-of-sight and over populated areas. The NTSB explained that proposed definition will allow the NTSB to be notified of and quickly respond to UAS events with safety significance. During the comment period, the NTSB received 11 timely public comments that are addressed by subject matter below.

II. Airworthiness Certification/Approval

The NTSB believes that an updated definition is necessary given the changing UAS industry. Section 44807 of the Federal Aviation Administration (FAA) Reauthorization Act of 2018 (Reauthorization Act) directed the Department of Transportation to use a risk-based approach to determine if certain UAS may operate safely in the national airspace. A number of drone delivery operations, among other applications, which need to operate beyond the provisions of the existing regulation, 14 CFR part 107, have begun using: (1) FAA Special Airworthiness Certificates—Experimental, or (2) approvals under the exemption processes per section 44807 of the Reauthorization Act that allows the FAA to grant exemptions on an individual basis. Because airworthiness certification is necessary for operation of civil aircraft outside of 14 CFR part 107 or without an exemption, as drone delivery and other applications develop, airworthiness certification will become more prevalent for certain unmanned aircraft of any size or weight.

A substantially damaged delivery drone may uncover significant safety issues, the investigation of which may enhance aviation safety through the independent and established NTSB process. This amended definition will treat a UAS with airworthiness certification in the same manner as a manned aircraft with airworthiness certification, thereby enabling the NTSB to immediately investigate, influence corrective actions, and propose safety recommendations.

Accordingly, the definition will be flexible to account for changes in the UAS industry and will allow the NTSB to respond quickly to UAS events with safety significance, while not burdening the agency or public with unnecessary responses.

III. Responses to Comments

The NTSB received 11 timely comments with some in support of the proposed definition as amended, and others who have raised various issues that the NTSB has addressed by subject further below. Although the agency received one late-filed comment, the NTSB notes that the commenter reiterated the comments received from those in opposition, which are addressed below.

Those in support included Sheri Pippin, a private citizen, who commented: "The FAA is being put under enormous pressure to authorize commercial UAS operations in reduced timeframes. Therefore, these commercial UAS operations should be subject to the same scrutiny as commercial manned operations. Allowing the NTSB to investigate accidents involving commercial UAS operations will provide an independent review of these operations which will hopefully improve the safety of these operations."

Another in support of the proposed amendment to the definition included Airlines for America (A4A), which stated that it "endorses the NTSB extending the scope of the data being collected on UAS related incidents because it will improve safety of operations by identifying potential safety risks and providing safety improvement recommendations and provide relevant data that can enhance security initiatives. In addition, the proposed definition change would give the public confidence that the criteria and standard used for UAS investigation are no different than manned aircraft, which is essential to define future safety controls and mitigations to the operation and design of UAS. The reporting and investigating of UAS accidents and incidents can assist in preventing future UAS encounter by providing informing and increasing awareness about actual UAS collision risks. Given the increased security

threats posed by UAS, A4A believes that the data collection will also help identify issues that affect security at airports."

An anonymous commenter stated that the agency "should have the authority to inspect, investigate, and provide safety recommendations to owners and operators of small unmanned aircraft under the current weight limit. It is a timely rule change that is in the best interest of public safety."

Jullian Lucas, another private citizen, agreed "that UAS should be regulated through a certification process depending on the mission the aircraft would be performing. . . . UAS aircraft although generally small can still be very dangerous if flown in a high[-] risk area and that needs to be monitored consistently when possible and the change to what can be investigated by the NTSB would help with that."

The remaining comments are addressed by subject matter below:

A. Public Safety Operators

A commenter who identified themselves as Public Safety Flight argued: "There is no mandatory reporting system for UAS pilots operating as commercial pilots under [14] CFR part 107 or in public aircraft operations without NTSB awareness and attention. Without including the reporting of all craft considered aircraft by the FAA, it seems logically impossible to determine the risk trends of problems of any particular UAS flying in the National Airspace System. The lack of reporting creates a safety hazard, with the least safe aircraft not being on the NTSB radar. This would leave the NTSB at odds with its statement of its intention to be able to 'respond quickly to UAS events with safety significance.'" The commenter continued: "The proposed change also appears to miss a technical issue that applies to all organizations operating UAS as public aircraft. Under a Certificate of Waiver or Authorization (COA), the government organization, operation, or entity must certify the UAS are airworthy, even without an Airworthiness Certificate. Since these UAS operated under a COA are certified

airworthy and flown as airworthy, any UAS operated under a COA should be subject to the exact requirements as if it holds an Airworthiness Certificate.*"*

NTSB Response. This comment pertains to increasing the scope to capture sUAS that are operated by police and fire departments and other similar governmental first response agencies. It appears that the commenter requests that the rule include substantial damage events that occur to first response operations, typically conducted under 14 CFR part 107 or as Public Aircraft under the provisions of a COA. The amended definition is intended to exclude the majority of part 107 events that do not result in injury or fatality. Otherwise, increasing the scope of this rulemaking to capture public safety operators would create complexity, confusion, and an excessive burden on the agency's resources with little benefit to safety.

B. Public Certificate of Authority "Airworthiness"

A number of commenters mentioned that public COA operators self-certify their aircraft. Specifically, Keith C. Raley, Chief of Aviation Safety, Training, Program Evaluations & Quality Management of the Office of Aviation Services at the Department of the Interior, queried: "whether it would apply to [F]ederal agencies already performing this function or if it would be limited in its applicability to sUAS that have received an FAA certification or approval and operating in a civil capacity. If this new rule were to apply to [F]ederal agencies already meeting the intended outcomes of the proposed regulation, it could create needless duplicity in that [Federal Management Regulation] FMR 102-33 compliant agencies are already managing sUAS in a similar manner. Additionally, the NTSB is often challenged with their ability to process their existing workload in the manned environment and adding this requirement will significantly increase their caseload resulting in even greater delays."

NTSB Response. The NTSB does not intend to capture these aircraft and clarifies that "airworthiness certificate" has the same meaning as that in 14 CFR part 21.

C. Section 44807 Approvals

A number of commenters noted that the section 44807 exemption process is applied very broadly. Entitled "Special authority for certain unmanned aircraft systems," section 44807(b)(1) provides that "the Secretary shall determine, at a minimum—which types of unmanned aircraft systems, if any, as a result of their of their size, weight, speed, operational capability, proximity to airports and populated areas, operation over people, and operation within or beyond the visual line of sight or operation during the day or night, do not create a hazard to users of the national airspace system of the public."

The Small UAV Coalition (Coalition) requested "clarification that the NTSB's use of the term 'airworthiness approvals' means exceptions under section 44807." The Coalition explained that "Operations under [p]art 107, even pursuant to a part 107 waiver, are not considered flights in a high[-]risk environment, which we believe is the NTSB's focus of this proposed rule." The Coalition continued, "Operations of a UAS that weighs over 55 lbs. may be authorized only by exemption under section 44807, and thus we believe that they would be covered by the proposed definition if an exemption under section 44807 is considered an 'airworthiness approval' as the preamble suggests." The Coalition recommended "limiting the proposed definition, with respect to substantial damage (revised to relate to property other than the drone) where there is no death or serious injury, to exemptions issued under section 44807, thus *excluding* any part 107 operation (including an operation conducted under a part 107 waiver), unless that aircraft is being operated under a section 44807 exemption."

NTSB Response. The NTSB agrees and to keep the focus on the operations most likely to be widespread in the National Airspace System (NAS), the phrase "or approval" will be removed from the proposed definition that was reflected in the

NPRM, thereby clarifying that the definition only applies to aircraft which hold an airworthiness certificate under 14 CFR part 21.

D. Experimental Airworthiness Certificates

A number of commenters noted that Special Airworthiness Certificates (SAC) – Experimental (or other categories of SAC) would be captured by this rule, and that many of these such aircraft are operated in remote test ranges posing low risk.

The Coalition, for example, argued that the "term 'holds an airworthiness certificate' would cover experimental category airworthiness certificates. Operations in the experimental category are for research and development purposes; commercial operations are not permitted. Thus, these operations are not conducted in a high[-] risk environment. Therefore, the Coalition supports including any aircraft that holds an airworthiness certificate other than in the experimental category."

NTSB Response. The NTSB acknowledges that Experimental test aircraft pose little risk to the public in an immediate sense. However, many of these aircraft are working toward certification to carry passengers in the so-called Urban Air Mobility segment, or other significant operations. Notification and investigation of such events can uncover safety issues prior to widespread commercial use. The NTSB notes this is in accordance with the practice for conventional manned aircraft as well, in which test aircraft accidents are investigated.

E. Hobby/Modeler Operations

A number of commenters requested that the NTSB investigate hobbyist/modeler events resulting in injury or death. The Coalition noted that "[m]any hobbyist/modeler operations under part 101 are conducted by drones that are also used in commercial operations under part 107. Given the language of the preamble, the Coalition seeks confirmation from the Board that it will investigate hobbyist/modeler aircraft accidents involving death or serious injury to a person."

Another commenter who referenced themselves as "Agricola Publius" expressed his belief that modelers and hobbyists should be included because a "man in a garage could easily construct a drone that fits the criteria for an airworthiness certificate would not be a concern if it crashed. The notion that one could accidentally put a miniature bomber through a car window and not be scrutinized by the NTSB is absurd."

NTSB Response. The NTSB does not now, nor does it plan to include model aircraft events in the definition. This is also in accordance with International Civil Aviation Organization (ICAO) Circular 328: "Model aircraft, generally recognized as intended for recreational purposes only, fall outside the provisions of the Chicago Convention …."

The NTSB notes that it may optionally investigate any occurrence which poses a threat to air safety, but requiring investigations of model aircraft events is beyond the scope of this rulemaking.

F. Application to part 107 and Harmonization with 14 CFR 107.9

A number of commenters discussed the applicability and harmonization with UAS operated under the provisions of 14 CFR part 107 (Small Unmanned Aircraft Systems) and the FAA's notification requirement in § 107.9 for accident reporting of sUAS. Section 107.9, in pertinent part, requires a remote pilot to report any sUAS operation involving property damage—other than the sUAS—unless the cost of repair does not exceed $500, or the fair market value does not exceed $500 in the event of total loss.

The Cargo Airline Association (CAA) "proposes aligning the current accident reporting threshold which provides a takeoff weight of 55 lbs. and a minimum cost of repair and fair market value of any property loss. (See 14 [CFR] 107.9). Doing so would align the [p]art 107 accident reporting requirements with NTSB's authority under [p]art 830."

The Coalition "urges the Board to adapt the FAA's definition that refers to damage not to the drone but to property other than the drone. 'Substantial damage' in the NTSB's current and proposed definition refers to damage to the aircraft, whereas the FAA's definition of 'unmanned aircraft accident' in 14 CFR 107.9 . . . refers to damage to property 'other than to the small unmanned aircraft.'" The Coalition recommended that "the NTSB adapt the $500 threshold in the FAA's definition in 14 CFR 107.9 . . . ." The Coalition asserted that "UAS that will hold an airworthiness certificate or section 44807 approval are often small, lightweight, and designed with materials and features that substantially absorb the energy and resultant damage of a potential collision. The NTSB's proposed change would de-incentivize the incorporation of such features by focusing on the level of damage to the airframe instead of the much more relevant level of damage to persons or property." In its footnote, the Coalition stated that it "recognizes that 49 CFR 830.5 requires reporting of any incident in which an aircraft causes $25,000 in damages to property other than aircraft. This provision was likely drafted with legacy aircraft in mind. While not in the scope of this rulemaking, the Coalition wishes to refute the notion that because [the] NTSB already has a definition of accident that includes damage to property in [§]830.5, the definition of unmanned aircraft accident in section 830.2 must focus on the damage to the aircraft."

NTSB Response. The NTSB believes there is some misunderstanding of language in the NPRM preamble, which may have caused confusion and concern. The mention of part 107 in the NPRM is in the preamble section entitled "Unaffected Regulations." Except for a small segment of part 107 (subpart D, Operations Over Human Beings, § 107.140 Category 4 operations), no small UAS operated under part 107 holds, or will hold, airworthiness certifications, and therefore will not be affected by this rule.

Thus, there is no reason to harmonize the NTSB regulation with § 107.9 as far as a non-injury event because they apply to different aircraft and operations. The amendment applies to UAS of any size, which operate under other parts of 14 CFR, such as 91 or 135, and do so with airworthiness certification under 14 CFR part 21. Commenters mentioned that some certified aircraft may be of small size or weight and pose little risk. The NTSB does not intend to evaluate and determine the risk level, and defers to the FAA requirement for airworthiness certification for a given vehicle or operation, which the NTSB believes is a more relevant harmonization. The NTSB does not agree with comments which claim that sUAS with very low risk exposure, but nonetheless receive airworthiness certification should be exempted. The existing Category 1, 2, and 3 provisions—in part 107 subpart D—capture many of the low-energy or physically-protected aircraft and do not require airworthiness certification; therefore, they are outside the scope of this rulemaking. This is also in keeping with the definitions for manned aircraft. The end result of the amendment will treat manned and unmanned aircraft identically for accident notification and investigation purposes.

Similarly, some commenters mentioned the FAA § 107.9 criteria of $500 of damage to objects other than the UAS. Although NTSB does have a notification requirement related to other damage, the current definition of accidents of any kind of aircraft is not cost-based. The NTSB believes the cost of other damage is an arbitrary outcome of a particular event, which may not have any relation to safety issues.

Under § 830.2, substantial damage is defined as "damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component." Asking the NTSB to revise its definition of "substantial damage" is beyond the scope of this rulemaking; however, the following comment and response partially covers this concern.

G. Frangible Components

A number of commenters requested that the NTSB not consider frangible components or other features that by design may result in damage to the aircraft, but do not pose a significant risk, e.g., parachute deployments.

The Association for Unmanned Vehicle Systems International (AUVSI) noted that "[n]ew technologies and construction materials, including light-weight and frangible materials, ensure that small UAS are purposefully built to lessen any impact and damage to the public, other aircraft, or to property. Accordingly, AUVSI advises the NTSB to take into consideration the FAA's risk-based requirements of aircraft that receive an airworthiness certificate or approval and the extreme low-risk categories that many of these aircraft fall into. For example, the complete elimination of the weight standard may not be the best way to achieve NTSB's intent. Instead, AUVSI suggests maintaining a maximum takeoff weigh tied to the 'substantial damage' clause, such as what the . . . [FAA] defines as the . . . [sUAS] category, consisting of UAS of less than 55 pounds. AUVSI also suggests refining the proposed language to align with the FAA's [p]art 107 Rule (14 CFR [part] 107) accident reporting language. Specifically, we propose the condition to specify that these accident investigations are only undertaken if the cost of repairs exceeds $500 and/or the fair market value of property damage exceeds $500, as is this case in . . . § 107.9. This will ensure that the NTSB's authority is targeted in a cost effective manner that yields true benefits to aviation safety."

The CAA noted that "[b]ecause of their small size and light weight, most [sUAS] are made by frangible material, designed to break down in the event of an accident, presenting little safety risk to the general public. Requiring reporting of accidents of small UAS, solely because they hold an airworthiness certificate or approval, could lead to [the] NTSB being inundated with investigations that do not

present a high safety risk to the public. It could lead to further resource constraints and divert essential resources with the agency."

NTSB Response. The NTSB agrees with this concept and has operated in this manner since the initial UAS definition in 2010. The NTSB notes that damage to intentionally frangible components or other by-design damage does not qualify as "substantial damage" for the purpose of this rule.

H. Gender Neutral Terminology

Several commenters referenced recommendations by the FAA's Drone Advisory Committee's (DAC) to revise drone terminology/language in gender-neutral terms. Specifically, the Air Line Pilots Association, International (ALPA) requested that the NTSB change the term "Unmanned Aircraft System" to "Remotely Piloted Aircraft System (RPAS)" as recommended by DAC. ALPA noted that using RPAS will align with ICAO's standards and is a term also used by Transport Canada. ALPA noted that DAC also recommended using "uncrewed" instead of "unmanned"; ALPA further recommended that the NTSB use such language in part 830. By footnote, the CAA noted that on June 23, 2021, the FAA DAC presented recommendations to the FAA for gender-neutral language, which included using "uncrewed" in lieu of "unmanned."

NTSB Response. This proposal is beyond the scope of this rulemaking,

.I. Lead Agency

The Small UAV Coalition "recommends the NTSB and FAA agree on criteria to determine whether the NTSB or FAA should be the lead agency of an UAS accident investigation, consistent with FAA Order 8020.11D."

NTSB Response. Based on statutory authority, the NTSB is the "lead" agency for civil aviation accident investigations, which covers UAS. Under 49 U.S.C. 1131(a)(1)(A), the NTSB shall investigate or have investigated the facts, circumstances, and cause or probable cause of an aircraft accident. Under section 1132(c), the NTSB

provides for FAA participation when necessary. FAA Order 8020.11D describes the FAA's investigation procedures and responsibilities for aircraft accident and incident notification, investigation, and reporting.

J. Intentional Crashing of the Drone

The Coalition argued, "a remote pilot who intentionally decides to crash the drone to avoid the risk of collision with a person or property …. should not be reportable."

NTSB Response. The NTSB agrees that in a similar manner to the frangible component section above, a UAS that has been crashed or sacrificed intentionally for safety purposes (as opposed to a nefarious act) does not meet the definition of "accident." However, operators should be reminded that if the reason for the sacrifice is a listed event in § 830.5, a notification may still be required.

IV. Regulatory Analysis

Because the NTSB is an independent agency, this rule does not require an assessment of its potential costs and benefits under section 6(a)(3) of Executive Order (E.O.) 12866, Regulatory Planning and Review, 58 FR 51735 (Sept. 30, 1993). In addition, the NTSB has considered whether this rule would have a significant economic impact on a substantial number of small entities, under the Regulatory Flexibility Act (5 U.S.C. 601-612). The NTSB certifies under 5 U.S.C. 605(b) that this rule would not have a significant economic impact on a substantial number of small entities.

The NTSB does not anticipate this rule will have a substantial, direct effect on state or local governments or will preempt state law; as such, this rule does not have implications for federalism under E.O. 13132, Federalism, 64 FR 43255 (Aug. 4, 1999).

This rule complies with all applicable standards in sections 3(a) and 3(b)(2) of E.O. 12988, Civil Justice Reform, 61 FR 4729 (Feb. 5, 1996), to minimize litigation, eliminate ambiguity, and reduce burden. The NTSB has evaluated this rule under: E.O.

12898, Federal Actions to Address Environmental Judice in Minority Populations and Low-Income Populations, 59 FR 7629 (Feb. 16, 1994); E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks, 62 FR 19885 (Apr. 21, 1997); E.O. 13175, Consultation and Coordination with Indian Tribal Governments, 65 FR 67249 (Nov. 6, 2000); E.O. 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, 66 FR 28355 (May 18, 2001); and the National Environmental Policy Act, 42 U.S.C. 4321-47. Pursuant to the Paperwork Reduction Act, the NTSB has determined that there is no new requirement for information collection associated with this final rule. Pursuant to the Congressional Review Act (5 U.S.C. 801 *et seq.*), the Office of Information and Regulatory Affairs designated this rule as not a ‘‘major rule,’’ as defined by 5 U.S.C. 804(2).

The NTSB has concluded that this final rule neither violates nor requires further consideration under those orders and statutes.

List of Subjects in 49 CFR Part 830

Air transportation, Aircraft accidents, Aircraft incidents, Airworthiness directives and standards, Aviation safety, Drones, Investigations, Reporting and recordkeeping requirements, Safety, Unmanned aircraft systems.

Accordingly, for the reasons stated in the preamble, the NTSB amends 49 CFR part 830 as follows:

PART 830—NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS

1. The authority citation for part 830 continues to read as follows:

Authority: 49 U.S.C. 1101-1155; Pub. L. 85-726, 72 Stat. 731 (codified as amended at 49 U.S.C. 40101).

§ 830.2 [Amended]

2. Amend § 830.2 in paragraph (2) of the definition of "Unmanned aircraft accident" by removing the phrase "has a maximum gross takeoff weight of 300 pounds or greater" and adding in its place "holds an airworthiness certificate".

Jennifer Homendy,

Chair.

[FR Doc. 2022-14872 Filed: 7/13/2022 8:45 am; Publication Date: 7/14/2022]